3. The covalent organic nanosheets as claimed in claim **1**, wherein, the covalent organic nanosheets are characterized by BET surface area in the range of about 507 m2/g; pore volume of about 0.37 cc/g; N2 uptake 77K (~220 cc/g); thermal stability over 300° C. without significant weight loss.

4. The covalent organic nanosheets as claimed in claim **1**, wherein, the covalent organic nanosheets exhibit good thermal and chemical stability towards different solvents, electrolytes, and acidic media.

5. The covalent organic nanosheets as claimed in claim **1**, wherein, the covalent organic nanosheets are prepared by a) reacting triformyl phloroglucinol with 3,5-diaminotriazole in dioxane in presence of dimethylacetamide and mesitylene under stirring; b) adding 6M aqueous acetic acid followed by flash frozen the reaction mass in a liquid nitrogen bath; and c) heating the mixture at 120° C. for sufficient period of time followed by cooling to obtain covalent organic nanosheets.

6. A device comprising covalent organic framework derived nanosheets (CONs) of claim **1**.

7. The device as claimed in claim **6**, wherein, the device is selected from the group consisting of solar cells, batteries and capacitors.

8. The device as claimed in claim **7**, wherein, the device is Lithium ion battery.

9. The covalent organic nanosheets as claimed in claim **1**, wherein, the covalent organic nanosheet exhibits high specific capacity ~720 mAh/g at a high current density of 100 mA/g, when used as an anode in Li-ion battery.

10. The covalent organic nanosheets as claimed in claim **9**, wherein, the covalent organic nanosheets are reusable as an anode for more than 100 cycles with no loss of specific capacity.

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